

[0026] Having thus described the invention, what is claimed is:

- 1 1. In a round baler for movement across the ground and formation of
- 2 cylindrical bales of crop material, the baler having a frame with a front end and
- 3 an opposing rear end, a wheel assembly including a transverse axle part of and
- 4 supporting the frame, a bale-forming chamber supported on the frame and
- 5 including a forward portion and a tailgate vertically pivotable between a closed
- 6 position for forming round bales and an open position for bale ejection, a bale
- 7 kicker generally vertically pivotably connected to the frame for contacting a bale
- 8 during its ejection from the bale-forming chamber and for propelling it rearwardly
- 9 of the baler, the improvement comprising:
- 10 the bale kicker including:
  - 11 a generally flat table-like ramp affixed to the axle for generally free vertical
  - 12 pivotal movement between a closed position where it is approximately horizontal
  - 13 or slightly above horizontal, and an open position where it is below horizontal,
  - 14 generally in contact with the ground; and
  - 15 a first generally transverse torsion bar with a longitudinal axis generally
  - 16 parallel to the transverse axle and having a first end affixed to the axle, and an
  - 17 opposing second end affixed to the ramp, such that movement of the table
  - 18 between the closed position and the open position imparts a twist to the torsion
  - 19 bar that provides a kick to the ejected bale as it moves off the ramp onto the
  - 20 ground.
- 1 2. The improvement of claim 1, wherein:
  - 2 the torsion bar has a multifaceted portion on each of the first and second
  - 3 ends;
  - 4 an axle bracket is rigidly affixed to the axle and extends generally
  - 5 rearwardly away therefrom;

1           the axle bracket has a hole therethrough matching the multifaceted shape  
2        of the first end of the torsion bar, and the first end of the torsion bar extends  
3        through the hole in the axle bracket, whereby pivotal movement of the ramp from  
4        the closed position toward the open position imparts a twist to the torsion bar.

1   3.    The improvement of Claim 2, wherein:  
2       the second end of the torsion bar is affixed to the ramp by an elongate  
3       coupler that has a first end and an opposing second end;  
4       the coupler has a hole therethrough adjacent the first end of the coupler  
5       matching the multifaceted shape on the second end of the torsion bar and the  
6       second end of the torsion bar extends through the hold in the coupler;  
7       the second end of the coupler connected to the ramp to allow the table to  
8       pivot between the closed position and the open position and impart a twist to the  
9       torsion bar.

1   4.    The improvement of claim 3, wherein:  
2       the ramp is generally U-shaped with the parallel arms thereof pivotally  
3       affixed to the axle.

1   5.    The improvement of claim 4, wherein:  
2       the torsion bar is generally located between the parallel arms of the U-  
3       shaped ramp.

1   6.    The improvement of claim 3, wherein:  
2       the kicker includes a second torsion bar, and the first and second torsion  
3       bars are axially aligned.

1   7.    In a round baler for movement across the ground and formation of  
2       cylindrical bales of crop material, the baler having a frame with a front end and  
3       an opposing rear end, a wheel assembly including a transverse axle part of and

4 supporting the frame, a bale-forming chamber supported on the frame and  
5 including a forward portion and a tailgate vertically pivotable between a closed  
6 position for forming round bales and an open position for bale ejection, a bale  
7 kicker generally vertically pivotably connected to the frame for contacting a bale  
8 during its ejection from the bale-forming chamber and for propelling it rearwardly  
9 of the baler, the improvement comprising:

10 the bale kicker including:

11 a generally flat table-like ramp affixed to the axle for generally free vertical  
12 pivotal movement between a closed position where it is approximately horizontal  
13 or slightly above horizontal, and an open position where it is below horizontal,  
14 generally in contact with the ground; and

15 first and second generally transverse torsion bars with aligned longitudinal  
16 axes generally parallel to the transverse axle, each having a first end affixed to  
17 the axle, and an opposing second end affixed to the ramp, such that movement  
18 of the table between the closed position and the open position imparts a twist to  
19 the torsion bars that provides a kick to the ejected bale as it moves off the ramp  
20 onto the ground.

1 8. The improvement of claim 7, wherein:

2 each of the second ends of the torsion bars is affixed to the ramp by  
3 respective elongate couplers that have first ends and opposing second ends;  
4 the coupler has a hole therethrough adjacent the first end of the coupler  
5 matching the multifaceted shape on the second ends of the torsion bars and the  
6 second ends of the torsion bars extends through the hold in the coupler;  
7 the second ends of the couplers are connected to the ramp to allow the  
8 table to pivot between the closed position and the open position and impart a  
9 twist to the torsion bar.

1 9. The improvement of claim 8, wherein:

2 the ramp is generally U-shaped with the parallel arms thereof pivotally  
3 affixed to the axle.

1 10. The improvement of claim 9, wherein:

2 the first and second torsion bars are generally located between the

3 parallel arms of the U-shaped ramp.

1 11. A round baler for movement across the ground and formation of cylindrical

2 bales of crop material, the baler comprising:

3 a frame with a front end and an opposing rear end;

4 a wheel assembly including a transverse axle part of and supporting the

5 frame;

6 a bale-forming chamber supported on the frame and including a forward

7 portion and a tailgate vertically pivotable between a closed position for forming

8 round bales and an open position for bale ejection;

9 a bale kicker generally vertically pivotably connected to the frame for

10 contacting a bale during its ejection from the bale-forming chamber and for

11 propelling it rearwardly of the baler, the bale kicker comprising:

12 a generally flat table-like ramp affixed to the axle for generally free

13 vertical pivotal movement between a closed position where it is

14 approximately horizontal or slightly above horizontal, and an open position

15 where it is below horizontal, generally in contact with the ground; and

16 a first generally transverse torsion bar with a longitudinal axis

17 generally parallel to the transverse axle and having a first end affixed to

18 the axle, and an opposing second end affixed to the ramp, such that

19 movement of the table between the closed position and the open position

20 imparts a twist to the torsion bar that provides a kick to the ejected bale as

21 it moves off the ramp onto the ground.

1 12. The round baler of claim 11, wherein:

2 the torsion bar has a multifaceted portion on each of the first and second

3 ends;

1           an axle bracket is rigidly affixed to the axle and extends generally  
2 rearwardly away therefrom;  
3           the axle bracket has a hole therethrough matching the multifaceted shape  
4 of the first end of the torsion bar, and the first end of the torsion bar extends  
5 through the hole in the axle bracket, whereby pivotal movement of the ramp from  
6 the closed position toward the open position imparts a twist to the torsion bar.

1   13. The round baler of Claim 12, wherein:  
2           the second end of the torsion bar is affixed to the ramp by an elongate  
3 coupler that has a first end and an opposing second end;  
4           the coupler has a hole therethrough adjacent the first end of the coupler  
5 matching the multifaceted shape on the second end of the torsion bar and the  
6 second end of the torsion bar extends through the hold in the coupler;  
7           the second end of the coupler connected to the ramp to allow the table to  
8 pivot between the closed position and the open position and impart a twist to the  
9 torsion bar.

1   14. The round baler of claim 13, wherein:  
2           the kicker includes a second torsion bar, and the first and second torsion  
3 bars are axially aligned.

1   15. A round baler for movement across the ground and formation of cylindrical  
2 bales of crop material comprising:  
3           a frame with a front end and an opposing rear end;  
4           a wheel assembly including a transverse axle part of and supporting the  
5 frame;  
6           a bale-forming chamber supported on the frame and including a forward  
7 portion and a tailgate vertically pivotable between a closed position for forming  
8 round bales and an open position for bale ejection;

9           a bale kicker generally vertically pivotably connected to the frame for  
10    contacting a bale during its ejection from the bale-forming chamber and for  
11    propelling it rearwardly of the baler, the kicker comprising:  
12            a generally flat table-like ramp affixed to the axle for generally free  
13    vertical pivotal movement between a closed position where it is  
14    approximately horizontal or slightly above horizontal, and an open position  
15    where it is below horizontal, generally in contact with the ground; and  
16            first and second generally transverse torsion bars with aligned  
17    longitudinal axes generally parallel to the transverse axle, each having a  
18    first end affixed to the axle, and an opposing second end affixed to the  
19    ramp, such that movement of the table between the closed position and  
20    the open position imparts a twist to the torsion bars that provides a kick to  
21    the ejected bale as it moves off the ramp onto the ground.

1    16. The round baler of claim 15, wherein:  
2            each of the second ends of the torsion bars is affixed to the ramp by  
3    respective elongate couplers that have first ends and opposing second ends;  
4            the coupler has a hole therethrough adjacent the first end of the coupler  
5    matching the multifaceted shape on the second ends of the torsion bars and the  
6    second ends of the torsion bars extends through the hold in the coupler;  
7            the second ends of the couplers are connected to the ramp to allow the  
8    table to pivot between the closed position and the open position and impart a  
9    twist to the torsion bar.

1    17. The round baler of claim 16, wherein:  
2            the ramp is generally U-shaped with the parallel arms thereof pivotally  
3    affixed to the axle.

1    18. The round baler of claim 17, wherein:  
2            the first and second torsion bars are generally located between the  
3    parallel arms of the U-shaped ramp.